



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

September 14, 2010

Ms. Lori Podolak
Senior Regulatory Affairs Specialist
Regulatory Affairs Department
QSA Global, Inc.
40 North Avenue
Burlington, MA 01803

SUBJECT: REVISION NO. 6 OF CERTIFICATE OF COMPLIANCE NO. 9269 FOR THE
MODEL NO. 650L PACKAGE

Dear Ms. Podolak:

As requested by your application dated August 3, 2010, supplemented August 11 and 25, 2010, enclosed is Certificate of Compliance No. 9269, Revision No. 6, for the Model No. 650L package. Changes made to the enclosed certificate are indicated by vertical lines in the margin. The staff's Safety Evaluation Report is also enclosed.

The approval constitutes authority to use the package for shipment of radioactive material and for the package to be shipped in accordance with the provisions of 49 CFR 173.471. Those on the attached list have been registered as users of the package under the general license provisions of 10 CFR 71.17 or 49 CFR 173.471.

If you have any questions regarding this certificate, please contact me or Pierre Saverot of my staff at (301) 492-3408.

Sincerely,

A handwritten signature in black ink, appearing to read "Eric J. Benner".

Eric J. Benner, Chief
Licensing Branch
Division of Spent Fuel Storage and Transportation
Office of Nuclear Material Safety
and Safeguards

Docket No. 71-9269
TAC No. L24466

Enclosures: 1. Certificate of Compliance
 No. 9269, Rev. No. 6
 2. Safety Evaluation Report
 3. Registered Users

cc w/encls 1 & 2: R. Boyle, Department of Transportation
 J. Shuler, Department of Energy
 Registered Users

**CERTIFICATE OF COMPLIANCE
FOR RADIOACTIVE MATERIAL PACKAGES**

| a. CERTIFICATE NUMBER | b. REVISION NUMBER | c. DOCKET NUMBER | d. PACKAGE IDENTIFICATION NUMBER | PAGE | PAGES |
|-----------------------|--------------------|------------------|----------------------------------|------|-------|
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2. PREAMBLE

- a. This certificate is issued to certify that the package (packaging and contents) described in Item 5 below meets the applicable safety standards set forth in Title 10, Code of Federal Regulations, Part 71, "Packaging and Transportation of Radioactive Material."
- b. This certificate does not relieve the consignor from compliance with any requirement of the regulations of the U.S. Department of Transportation or other applicable regulatory agencies, including the government of any country through or into which the package will be transported.

3. THIS CERTIFICATE IS ISSUED ON THE BASIS OF A SAFETY ANALYSIS REPORT OF THE PACKAGE DESIGN OR APPLICATION

- a. ISSUED TO (*Name and Address*)
- b. TITLE AND IDENTIFICATION OF REPORT OR APPLICATION

QSA Global, Inc.
40 North Avenue
Burlington, MA 01803

QSA Global, Inc., application dated
August 3, 2010, as supplemented.

4. CONDITIONS

This certificate is conditional upon fulfilling the requirements of 10 CFR Part 71, as applicable, and the conditions specified below.

5.

(a) Packaging

(1) Model No.: 650L

(2) Description

A welded stainless steel encased, uranium shielded, Iridium-192 or Selenium-75 source changer. Primary components consist of a welded carbon steel shell, internal supports, depleted uranium shield, and a titanium "U" tube. The tube is crimped in the middle of the "U" to provide a positive stop for the source assembly. The Model No. 650L has two source locking assemblies, mounted on the top cover plate, that are used to secure the radioactive source in a shielded position during transport. The packaging measures approximately 10-inches (254 mm) wide, 13.25-inches (337 mm) high and 8.25-inches (210 mm) deep. The maximum weight of the packaging is 90 pounds (41 kg).

(3) Drawings

The packaging is constructed in accordance with QSA Global, Inc., Drawing No. R65006, Rev. J, sheets 1-5.

(b) Contents

(1) Type and form of material

Iridium-192 as sealed sources which meet the requirements of special form radioactive material.

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5. (b) Contents (continued)

Selenium-75 as sealed sources which meet the requirements of special form radioactive material.

(2) Maximum quantity of material per package

Ir-192: 240 curies (8.9 TBq) (output)

Se-75: 300 curies (11.1 TBq) (output)

Output curies are determined by measuring the source output at 1 meter and expressing its activity in curies derived from the following: 0.48 R/(h-Ci) Iridium-192 at 1 meter (Ref: American National Standard N432-1980, "Radiological Safety for the Design and Construction of Apparatus for Gamma Radiography") and 0.2 R/(h-Ci) Selenium-75 at 1 meter (Ref: U.S. Public Health Service, Bureau of Radiological Health, 1970. Radiological Health Handbook, Rockville, MD).

(3) Maximum weight of contents

0.08 pounds (36 grams), including the mass of radioactive material and the weight of the source capsule handling wire assembly for a shipment containing two source wire assemblies.

(4) Maximum decay heat

Ir-192: 4.8 Watts

Se-75: 1.52 Watts

6. The source shall be secured in the shielded position of the packaging by the source assembly. The source assembly must be fabricated of materials capable of resisting a 1475°F fire environment for one-half hour and maintaining its positioning function. The cable of the source assembly must engage the source hold-down assembly. The flexible cable of the source assembly must be of sufficient length and diameter to provide positive positioning of the source at the crimp of the "U" tube.

7. The nameplates shall be fabricated of materials capable of resisting the fire test of 10 CFR Part 71 and maintaining their legibility.

8. In addition to the requirements of Subpart G of 10 CFR Part 71:

(a) The package shall be prepared for shipment in accordance with the Operating Procedures in Chapter 7 of the application, and

(b) The packaging shall be maintained in accordance with the Maintenance Program in Chapter 8 of the application.

**CERTIFICATE OF COMPLIANCE
FOR RADIOACTIVE MATERIAL PACKAGES**

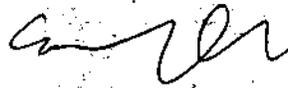
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9. Fabrication of new packagings is not authorized. However, fabrication of replacement components needed to support shipment of existing packages is authorized, except for the depleted uranium shield and the inner carbon steel shell.
10. The package authorized by this certificate is hereby approved for use under the general license provisions of 10 CFR 71.17.
11. Revision No. 5 of this certificate may be used until September 30, 2011.
12. Expiration date: November 30, 2015.

REFERENCES

QSA Global, Inc., application dated August 3, 2010.
Supplements dated August 11 and 25, 2010.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION



Eric J. Berner, Chief
Licensing Branch
Division of Spent Fuel Storage and Transportation
Office of Nuclear Material Safety
and Safeguards

Date: September 14, 2010



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION REPORT
Model No. 650L Package
Certificate of Compliance No. 9269
Revision No. 6

SUMMARY

By application dated August 3, 2010, supplemented August 11 and 25, 2010, QSA Global, Inc., (QSA) requested renewal of the Certificate of Compliance No. USA/9269/B(U)-96 for the Model No. 650L package. QSA submitted a consolidated application and requested that the package application review includes consideration of NUREG-1886, "Joint Canada-United States Guide for Approval of Type B(U) and Fissile Material Transportation Packages."

QSA increased the package contents to include up to two source wire assemblies and made minor clarifications in the application and to Drawing No. R 65006.

NRC staff reviewed the application using the guidance in NUREG-1609, "Standard Review Plan for Transportation Packages for Radioactive Material." Based on the statements and representation in the application, and the conditions listed below, the staff concludes that the package meets the requirements of 10 CFR Part 71. Staff also reviewed the application against NUREG-1886, "Joint Canada-United States Guide for Approval of Type B(U) and Fissile Material Transportation Packages," and found that the highlighted areas of emphasis have been appropriately addressed. The certificate has been renewed for a five year term.

EVALUATION

By application dated August 3, 2010, supplemented August 11 and 25, 2010, QSA Global, Inc., (QSA) requested renewal of the Certificate of Compliance No. USA/9269/B(U)-96 for the Model No. 650L package. QSA submitted a consolidated application and requested that the package application review includes consideration of NUREG-1886.

The applicant revised the maximum weight of the contents, i.e., 36 grams, to include the mass of the radioactive materials and the mass of the source capsule handling wire assembly for a shipment containing two source wire assemblies. The revision does not modify the package center of gravity or the package maximum mass, as evaluated and tested. According to Test Plan 80, Revision 1, included in the application, the weight of the projectors used in testing was 41 kg. Therefore, the staff finds that the applicant's request is reasonable and does not require any additional engineering evaluation.

The thermal design of the Model No. 650L package, used to transport special form radioactive material (Ir-192 or Se-75), with a maximum content weight of 36 grams and a maximum decay heat of 4.8 watts for Ir-192 and 1.52 watts for Se-75 respectively, is adequately evaluated. An expanded description of the thermal testing that demonstrated compliance with 10 CFR 71.73(c)(4) was included in the amendment. In the test description, the applicant noted that the depleted uranium shield was cracked and that thermal testing did lead to further shield degradation; however, a radiation profile of the device showed a radiation level of 28 mR/hr at

one meter, well below the allowable level of 1,000 mR/hr at one meter. The thermal performance of the package meets the thermal requirements of 10 CFR Part 71.

Safety-related fasteners were specified as meeting widely accepted industry standards; the minimum mechanical properties of the fasteners, including the yield strength, the tensile strength, and elongation to failure, are stated on the licensing drawings. The staff finds these standards and minimums acceptable, and in compliance with Section 2.5.2.1 of NUREG 1609, "Standard Review Plan for Transportation Packages for Radioactive Material."

The amendment made several additions to Table No. 2.2.A in the application to list the materials and the typical mechanical properties for those materials used in the Model No. 650L package. However, the minimum mechanical properties of the materials used in the package are mandated by specifications and standards described in the licensing drawings.

The amendment also expanded upon the acceptance testing used to demonstrate the performance of the depleted uranium shield in Section No. 8.1.6 of the application. The acceptance test is a radiation survey that would identify any significant void volumes within the shield. The staff finds this method acceptable and has approved it on previous QSA applications.

The applicant stated that there will be no fabrication of new Model No. 650L packages. Only fabrication of replacement components needed to support continued use of existing packages is authorized. Replacement components do not include the depleted uranium shield and the inner carbon steel shell. Those items can no longer be fabricated.

Under the Division of Spent Fuel Storage and Transportation (SFST) review procedures, the staff would normally require a greater level of detail in the licensing drawings for approval of a Type B(U)-96 package. However, the Model No. 650L package has been safely operated with no reported incidents.

The staff reviewed the consolidated application, as supplemented, and determined that the required documentation is available and complete. No changes were made to the operating and maintenance procedures.

Changes to Certificate of Compliance

The following changes have been made to the Certificate of Compliance:

Item No. 3(b) was updated to identify the application dated August 3, 2010.

Condition No. 5(a)(2) was updated to clarify the description of the packaging.

Condition No. 5(a)(3) was updated to include Revision J of Drawing No. R 65006.

Condition No. 5(b)(3) was added to indicate the maximum weight of the contents, including the weight of the source capsule handling wire assembly.

Condition No. 5(b)(4) was added to indicate the maximum decay heat for Ir-192 and Se-75.

Condition No. 8(b) was modified to include only maintenance of the package since fabrication of new packagings is not authorized.

New Condition No. 9 was included in the Certificate of Compliance to clarify that fabrication of replacement components is authorized, except for the depleted uranium shield and the inner carbon steel shell of the package.

As a consequence of the inclusion of the new Condition No. 9, the previous Conditions Nos. 9-11 were renumbered 10-12, respectively.

Condition No. 11 was revised to authorize use of the previous revision of the certificate for a period of approximately one year.

Condition No. 12 was revised to change the expiration date of the Certificate of Compliance to November 30, 2015.

The consolidated application, dated August 3, 2010, and the supplements dated August 11 and 25, 2010, were included in the References section.

CONCLUSION

The certificate has been renewed for a five year term which expires on November 30, 2015. Based on the statements and representations contained in the application, and the conditions listed above, the staff concludes that the design of the Model No. 650L package has been adequately described and evaluated. The staff concludes that the changes indicated do not affect the ability of the package to meet the requirements of 10 CFR Part 71.

Issued with Certificate of Compliance No. 9269, Revision No. 6,
on September 14, 2010.